Managing Pine Plantations for Timber and Wildlife

by Fred Kimmel

Conservation Reserve Program

The Conservation Reserve Program (CRP) was enacted in 1985 to reduce cropping on highly erodible land. Farmers in the Southeast were given several options. Most farmers in the southeastern coastal plain chose to plant pine trees, either loblolly or slash. These sites were planted in plantations which are very similar to row crop plantings. Seedlings were generally spaced six to eight feet apart, in rows six to eight feet apart. This spacing regime resulted in 680 to 1,200 trees per acre. Now that many of these plantations are over 10 years of age, it is time for landowners to begin planning to manage these timberlands if they wish to improve wildlife habitat and timber production.

Why Bother?

Unmanaged pine plantations provide very poor wildlife habitat. The canopy of such closely spaced trees keeps sunlight from reaching the ground, thus preventing the growth of plants valuable to wildlife. The dense mat of shed pine needles acts as a mulch and further limits the growth of understory vegetation. Recreational opportunities such as hunting or wildlife viewing will be limited in an unmanaged pine plantation.

Birds such as bobwhite quail, which are dependent on early successional (grassland and shrubland) habitat, have been declining over the last 30 years. Since 1966, bobwhite quail abundance, as measured by the Breeding Bird Survey, has declined 3.6 percent to 4.5 percent per year in the important pine production areas of the Southeast. Other birds which utilize habitat similar to bobwhites, such as Eastern meadowlarks and indigo buntings, are exhibiting long-term population declines as well. Nationally, over 60 percent of the birds in the grassland/shrub species groups are declining. Management of pine plantations with an eye to wildlife can provide much needed habitat and enhance wildlife associated recreation on your property.

Timber production in unmanaged pine plantations is limited by competition for water, nutrients and sunlight. Losses from disease and wildfire are also more likely. Unmanaged stands will produce less timber and ultimately less revenue than a properly managed stand. Over a 30-year period, a pine stand managed for maximum timber production can yield $2,000-$4,000 per acre. Since the objective of these pine plantings for many landowners is future income, it is essential that the plantations be properly managed to realize the full potential of this investment.

Decision Time

Before you can effectively manage your pine stand, you will need to give some thought to exactly what results you want to achieve. Your management scheme will be somewhat different if you want to maximize the bobwhite quail population than if you want maximum timber production. Your state forestry or wildlife agency professional can provide you with information to help you with your decision.

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Pine stand after thinning.

Saw and Match ... Essential Tools

It may seem contradictory to those not familiar with forestry or wildlife management, but regardless of your management objectives, the two practices which provide the greatest benefits are cutting and burning. These practices improve the health, vigor and growth rate of the timber stand and improve wildlife habitat by encouraging growth of desirable understory vegetation.

Cutting, or thinning, is conducted periodically throughout the life of the stand. Thinning reduces competition among trees for sunlight and nutrients, resulting in increased growth and vigor. Properly done, thinning produces an open canopy and increases the amount of sunlight which reaches the ground. The increased sunlight stimulates the growth of woody and herbaceous vegetation which provides food and cover for wildlife. In addition, the soil disturbance caused by the equipment typically used in thinning operations, stimulates the growth of valuable wildlife food plants, particularly legumes such as partridge pea.

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The first commercial thinning usually occurs at 12 to 20 years of age, depending on the fertility of the site and region of the country. If you notice that some trees in the stand are dying, it is time to thin. If thinning does not occur, growth will slow and the stand will become stagnated. The first thinning will involve removing entire rows and possibly some individual trees in the remaining rows. About seven to 13 cords per acre of pulpwood will be removed during the first thinning.

The stand should be thinned again five to seven years later. Pulpwood and, on some more fertile sites, saw logs will be cut at that time. At about 30 years of age, the stand can either be clear-cut for saw logs and chipping or can be thinned and managed for long rotation sawtimber.

The density of the stand following thinning, expressed as basal area, is dependent on your objectives. The higher the basal area, the more densely stocked is the stand. If you wish to maximize wildlife, your stand will need to be more open than if you are interested strictly in maximizing timber production. For instance, if you are interested in managing for bobwhite quail, the basal area should be 25 to 30 percent lower than what it would be if timber production was the only objective. The lower basal area allows more sunlight to reach the forest floor, which increases the growth of vegetation needed by wildlife for food and cover. A maximum basal area of 50 to 60 square feet per acre is generally recommended when quail habitat development is the objective.

Prescribed burning is the practice of using controlled fire to burn the understory of a stand to remove rank vegetation and leaf litter. This practice stimulates growth of plants important to wildlife, controls invasion of unwanted woody vegetation, protects the stand from wildfires by reducing the amount of available fuel, helps control diseases which can damage the stand, and stimulates insect populations that are important bobwhite quail and turkey foods.

Prescribed burning helps clear away undergrowth from the forest floor.

Pine trees are fire tolerant, so burning under prescribed conditions does not damage the timber stand. However, loblolly and slash pines should have a trunk diameter of at least four inches and be 15 feet tall before prescribed burning is conducted. Generally, prescribed burning is conducted in late winter or early spring. Burning for fuel reduction should be conducted on at least a four-year interval. For most wildlife, more frequent burning is recommended. Bobwhite quail and wild turkeys benefit greatly from prescribed burning. In many areas of the Southeast, burning should occur annually to maximize benefits to bobwhites. Wild turkeys can generally benefit from a one- to three-year burning cycle. White-tailed deer generally do best with burning on a three to five year rotation. Optimum burning rotations will vary depending on the site, so check with your state wildlife agency for specific recommendations.

It is wise to rotationally burn or protect some areas from prescribed fire, particularly creek bottoms and hardwood drains. This will provide cover for wildlife during the short period of time it takes the vegetation in the burned area to regenerate.

Responsible prescribed burning requires preparation, some basic equipment, knowledge of fire behavior and an awareness of applicable state regulations. If you are not experienced in the use of prescribed fire, contact your state wildlife or forestry agency for assistance and information.

Thinning and burning go hand in hand. Thinning without prescribed burning, or vice versa, will not provide the desired benefits to the timber stand or the wildlife that inhabits it.

Longleaf Pine

At the time of European settlement, longleaf pine forests, and the myriad of plants and animals associated with this ecosystem, covered an estimated 90 million acres in the southeast. However, logging, fire suppression, and conversion to other forest types such as loblolly and slash pine have reduced the original longleaf pine forest by 95%. In fact, some ecologists consider the longleaf pine ecosystem to be the most threatened in North America.

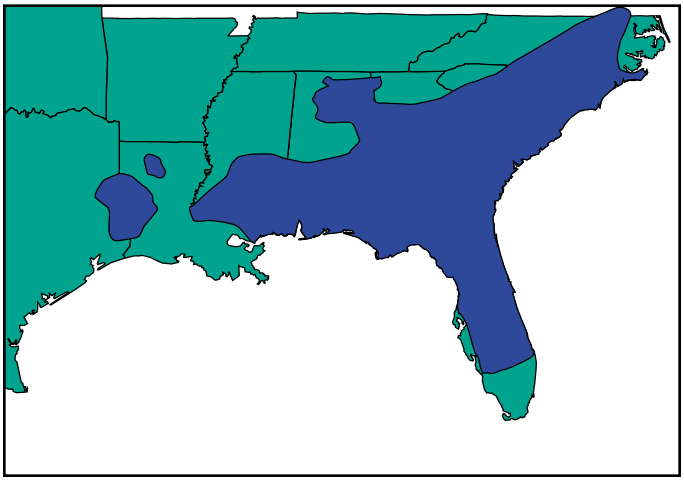
Longleaf pine timber production integrates well with bobwhite quail habitat management. In many respects longleaf pine is better suited to quail management than loblolly or slash pines. Newly established loblolly and slash pine stands experience a period of low productivity after a few years when the canopy closes and shades out important quail food and cover plants. Unless pre-commercially thinned, this poor quail habitat persists until the first commercial thinning. Additionally, prescribed fire is generally excluded from young loblolly and slash pine stands because of potential damage to the seedlings. In contrast, young longleaf stands have an open canopy at normal planting densities and longleaf can be prescribed burned at a

FALLOW DISCING

In addition to thinning and prescribed burning, rotational light discing of openings or strips in the pine stand (fallow discing) will greatly enhance quail habitat. In order to make a competitive bid to re-enroll in the CRP, a landowner will have to maintain 15 percent to 20 percent of the stand in permanent wildlife openings. Fallow discing is an economical and effective way to maintain and manage openings. The purpose of discing in this situation is not to prepare a seed bed, but rather to disturb the soil and reduce dense grass cover. This practice increases available nesting cover, improves brood habitat and enhances quail movement throughout the stand. Desirable seed-producing plants, such as partridge pea, are dependent on occasional soil disturbance and discing encourages their growth. Insects, which are an important food for nesting bobwhites and broods, are more abundant in the new succulent vegetation stimulated by discing. Fallow discing is

usually conducted on a two to four year rotation during the fall and winter. However, the time and frequency of discing will vary regionally and from site to site, so contact your state wildlife agency for specific recommendations. Be prepared to experiment with different prescriptions to find out what works best on your property.

young age. Additionally, on certain sites longleaf pine can be grown for longer rotations with less mortality due to insects, disease, and drought than loblolly or slash pine. Thus, with timely prescribed burns and thinning, longleaf pine can be managed to provide quality quail habitat for a longer percentage of the stand's life than can be achieved with loblolly or slash pine.



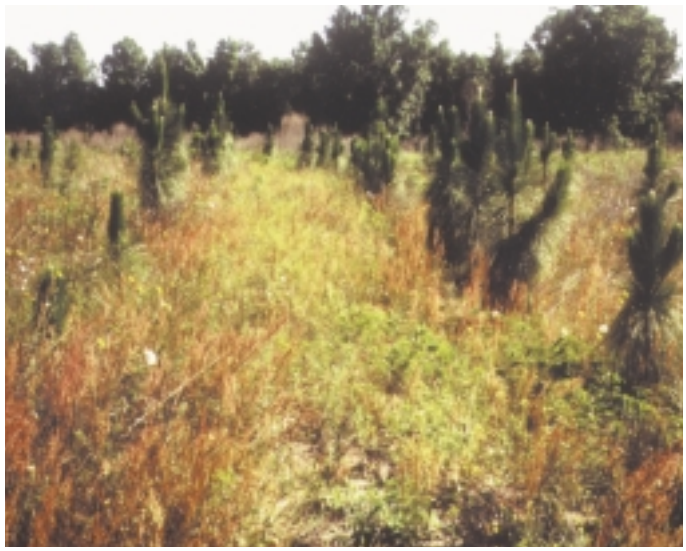
Historic range of longleaf pine.

Longleaf Pine Conservation Priority Area

Landowners now have an unprecedented opportunity to receive financial assistance to restore longleaf pine on their property by enrolling in the Conservation Reserve Program (CRP). Beginning with CRP Sign-Up 18, portions of 9 southeastern states within the historic longleaf range have been designated a National Conservation Priority Area (NCPA). This designation increases the likelihood that a bid submitted by an owner of eligible land within the NCPA on which longleaf is to be established will be accepted into the CRP. The NCPA designation eliminates the erodibility requirement which in the past, excluded substantial upland acreage from eligibility in the CRP.

The CRP is a voluntary program which encourages farmers and other landowners to establish long-term cover on eligible land in return for annual rental payments, cost-share payments, and incentive payments for approved practices. To be eligible, land must have been farmed 2 of the last 5 years, it must be capable of being farmed, and must meet ownership requirements. In addition, land must fit into one of several categories such as highly erodible or located in a National or State Conservation Priority Area.

Landowners should be aware that prescribed burning is essential to establishment and maintenance of longleaf pine. Longleaf pine must be burned periodically in order to grow and develop properly as well as to provide the wildlife and ecological benefits the NCPA designation has targeted. Information on longleaf pine establishment is available from the Natural Resources Conservation Service (NRCS) and your state forestry agency. In addition, many state wildlife agencies, in cooperation with the NRCS, can provide assistance in developing a CRP plan that will maximize wildlife benefits. Contact your local Farm Services Agency office for information on enrolling in the Conservation Reserve Program.



Good quail habitat among longleaf seedlings.

This article was prepared by the Southeast Quail Study Group (SEQSG) Habitat Implementation Committee. The SEQSG was formed by the Southeastern Association of Fish and Wildlife Agencies in 1995 and is composed of wildlife biologists from state and federal agencies, universities, private conservation groups and private/corporate landowners. The SEQSG is charged with addressing the long-term decline in bobwhite quail populations through management, research and education. Fred Kimmel is a wildlife biologist with the Louisiana Department of Wildlife and Fisheries.